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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,606	03/15/2001	Xiaoming Jin	LDC-MASK	4987

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DENTSPLY INTERNATIONAL INC  
570 WEST COLLEGE AVENUE  
YORK, PA 17404

EXAMINER

MCLENDON, SANZA L

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 04/04/2003

id

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/809,606

Applicant(s)

JIN ET AL.

Examiner

Sanza L McClendon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 21 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3/8 6) ☐ Other

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# DETAILED ACTION

## *Response to Amendment*

1. In response to the Amendment received on January 21, 2003, the examiner has carefully considered the amendments. The examiner acknowledges the cancellation of claims 1-25.

## *Response to Arguments*

2. Applicant's arguments, see paper number 11, filed January 21, 2003, with respect to the rejection(s) of claim(s) 1-25 under 35 USC 102(b) and 35 USC 102(e) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the translated German patent 198 03 302 A1 to Gente et al. See below for the explanation of the rejection.

## *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 26 is rejected under 35 U.S.C. 102(b) as being anticipated by Gente et al (DE 198 03 302 A1).

Gente et al teaches components for the preparation of fillings that do not leave marginal gaps and that are made of light curable plastic filling materials for human teeth. Gente et al is concerned with overcoming shrinkage and associated problems in composite materials in dental cavities produced during the course of polymerization. Gente et al discloses overcoming said problems can be done using a combination of components to

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control, by way of exposure to light, the polymerization of the composite material or other light-curable filling material such that the cure shrinkage is compensated for in that additional filling or composite material is allowed to flow into the cavity. Said combination comprises a light exposure device--see figure 3--comprising a light insert--see figure 2. Said light insert is designed to fulfill a light conducting and/or light -distributing function and comprises a light exit window and a light entrance window and is made from an organic or inorganic material that is permeable to light. The light insert has one or a plurality of light entry windows and one or a plurality of light exit windows.

Said light insert is introduced into the composite/filling material, which is still soft and fills the dental cavity. Said light insert with the exit and entry windows can extend completely or partially over the area of contact between said light insert and the composite/filling material. Once said light insert is introduced the composite/filling material, the curing via light irradiation of said material can be started. At the start of curing the light (irradiation) is exposed to only to the light insert via the light exposure device such that light is conducted into the filling/composite material, which for a curing front results which starts on the surface of the light exit window of the light insert and spreads through the filling material, which will eventually reach the peripheral regions of the cavity (i.e. tooth-composite interface). Once this curing step takes place the light exposure device can be configured to expose the entire composite (filling material and light insert) to light for a final cure or the light insert can be remove and the resulting cavity can be filled with additional filling material or a pre-manufactured fitting piece can be placed into the cavity for a final cure.

Gente et al teaches in an embodiment that the light exposure device can be fitted with additional pieces for optimally transmitting the light into surrounding areas of the light insert within a desired time, at a desired intensity, and in a desired direction. One such piece is a diaphragm--see figure 1 (2) or figure 3 (4). The diaphragm is a cover for the free surface of the filling material adjacent to the light insert such that the light is initially able to penetrate the filling/composite material only by way of the light insert. After removal of the diaphragm, the filling/composite material and the light insert are subsequently exposed to irradiation in the conventional manner. The examiner is contending that the diaphragm

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anticipates applicant's mask because said diaphragm allows first for curing the filling/composite material from the interior to the exterior (tooth/composite interface) without curing the top of the filling material. Once the diaphragm is removed a complete exposure is done to ensure complete curing. Gente et al, also, discloses to expose the filling/composite material to light it also possible, as an embodiment of the inventive subject matter, to have a light exposure source with an adjustable light exit window and a controllable light intensity and light divergence, which makes it possible to optimize the reproduction of the light flux, which the undesirable shrinkage of the filling/composite material is minimized or stopped.

Gente et al does not expressly disclose overcoming polymerization stresses in the cured composites/inserts produced, however Gente et al is primarily concerned with reducing shrinkage in cured dental fillings (composites) by controlling the irradiation exposure of said filling/composite material verses prior-art methods of a step by step build-up process of separate and/or successive adding and curing of filling/composite materials. Gente et al discloses shrinkage leads to gaps forming in the transition zone from the composite and the tooth. Said gaps damage teeth by ultimately causing caries, which can also be caused by polymerization stresses in the cured composite materials. Thus the examiner contends that the polymerization method of Gente et al should also inherently reduce/prevent polymerization stress because Gente et al discloses a method of polymerizing by selectively exposing a segment (in this case the inner portion of the filling/composite material) of filling/composite material while limiting the exposure (via the diaphragm) of a selectively different segment until the final cure is initiated. As an added footnote, because applicant's claim language is open language (comprising the steps of) it is open to other steps, such as a final and complete curing of all segments.

The instant invention of claim 26 is anticipated by the reference in the absence to arguments to the contrary.

#### *Conclusion*

5. A translated copy of DE 198 03 302 is being sent with this office action.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L McClendon whose telephone number is (703) 305-0505. The examiner can normally be reached on Monday through Friday 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (703) 308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0657.

Sanza L McClendon

Examiner

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SMc

April 2, 2003



James Seidleck  
Supervisory Patent Examiner  
Technology Center 1700